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Alternatives and Associated Fuel-Energy Requirements for Corn Harvesting

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Recommended Citation

South Dakota State University, Cooperative Extension, "Alternatives and Associated Fuel-Energy Requirements for Corn Harvesting" (1973). *SDSU Extension Fact Sheets*. 670.
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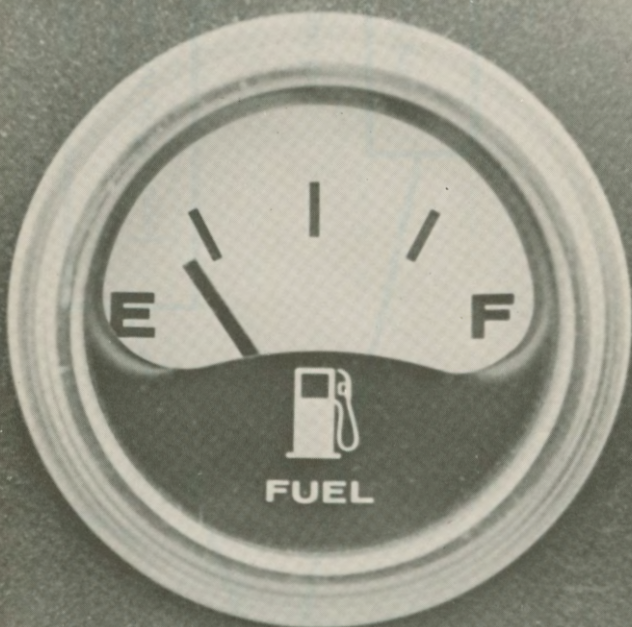
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Corn Harvesting

Alternatives and Associated
Fuel-Energy Requirements



Cooperative Extension Service
South Dakota State University, Brookings
U. S. Department of Agriculture

Alternatives and Associated Fuel-Energy Requirements for

Corn Harvesting

By

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General Information

The flow charts shown in this Fact Sheet can be used to determine fuel and energy requirements for harvesting either dry corn or wet corn. These charts can also be used to select corn harvesting, storage,

and handling system alternatives.

The most common alternatives available to South Dakota farmers for harvesting and storing are included.

Dry Harvesting of Corn

If weather and crop conditions permit, harvesting field dry corn requires the least fuel and electricity to get the crop from field to feeding or market. Above each block in the chart is given the amount of gasoline required per bushel of corn for the operation. For example, if a picker is used, 0.02 gal/bu of gasoline is needed on the average to harvest ear corn. Each 100 bushels would take 2 gallons of gasoline. To get the total fuel requirements for a given harvesting and handling alternative, fuel needs for each block (operation) can be added. To pick ear corn, store in a ventilated crib, grind, and then feed, for example, would require a total of .02+.02+

.01=.05 gal/bu. Then 5 gallons of gasoline would be needed for each 100 bushels of corn. To convert the gasoline figures to diesel multiply the figure by .72. To convert from gasoline to LPG ("bottled gas") multiply the figure by 1.2. If an individual operator has fuel consumption records that appear more valid than those shown, then use them. Also, note that alternatives colored in green appear to offer the lowest energy requirements. The blocks outlined in red are those that have been determined as needing higher energy requirements. Some of these may differ from farm to farm, depending upon what is available.

Wet Harvesting of Corn

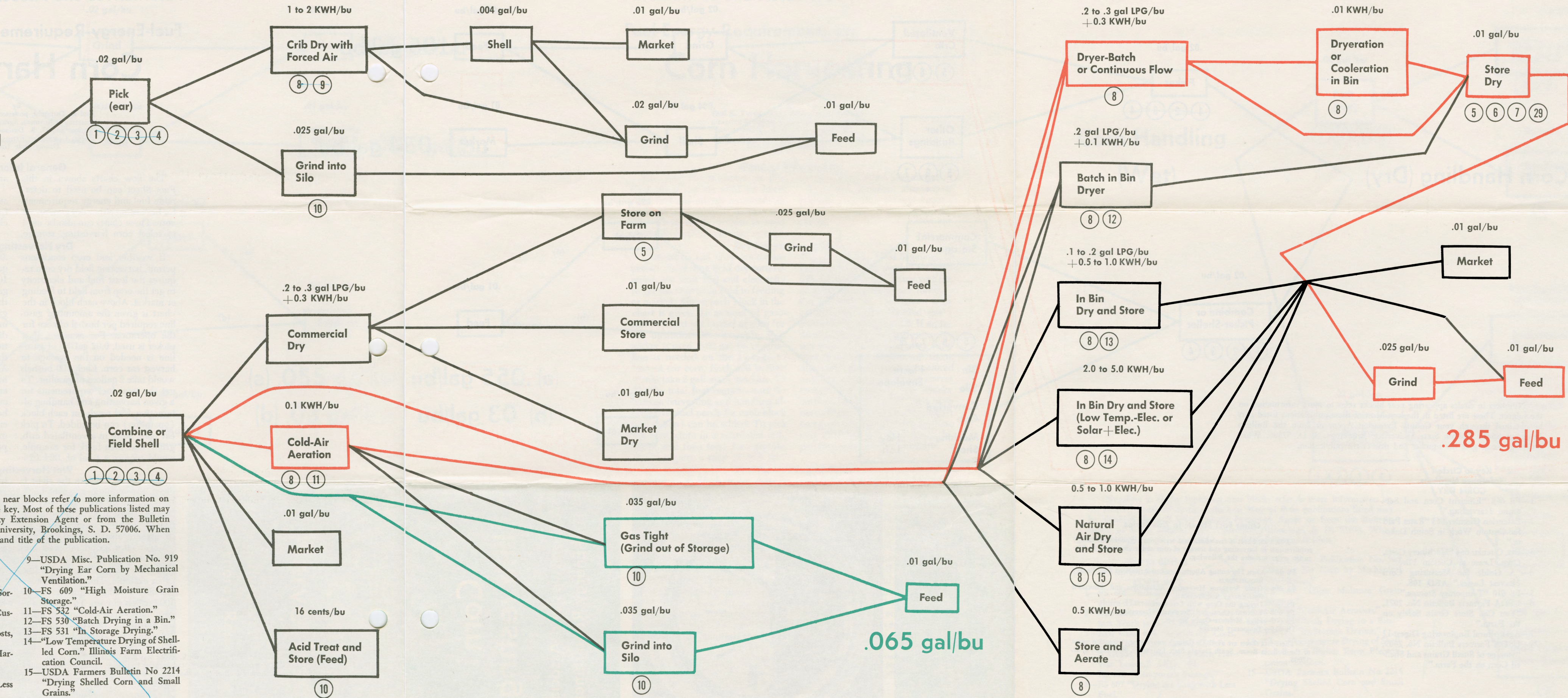
Above each block in the chart is given the amount of gasoline or LPG ("bottled gas") required per bushel of corn to perform the operation. Electricity requirements for drying are also included. To pick wet ear corn, grind into silo and then feed, requires a total of .02+.025+.01=.055 gal/bu of gasoline, as an example. Thus 5.5 gallons of gasoline would be required for each 100 bushels of corn. To convert the gasoline figures to diesel multiply the figures by .72. To convert from gasoline to LPG multiply the figures

by 1.2. To convert LPG to gasoline divide the LPG number by 1.2. The path marked in red indicates an alternative that has high fuel requirements. The 0.285 gal/bu is expressed in gasoline. Electricity requirements are not included in the above figure. A low fuel requirement is indicated by the green path. If an individual operator has fuel and electrical consumption records that appear more valid than those shown, then use them. The fuel and energy costs for drying are based on reducing moisture content 10 percentage points.

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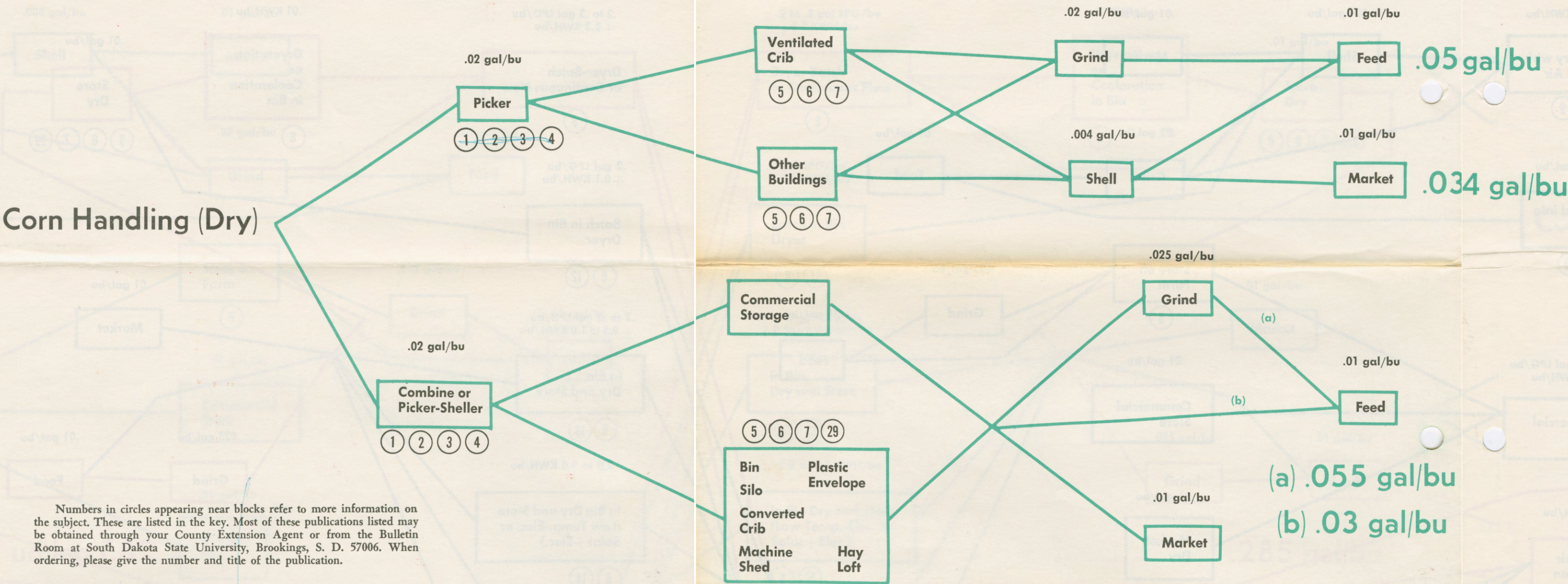
Corn Handling (Wet)



Numbers in circles appearing near blocks refer to more information on the subject. These are listed in the key. Most of these publications listed may be obtained through your County Extension Agent or from the Bulletin Room at South Dakota State University, Brookings, S. D. 57006. When ordering, please give the number and title of the publication.

- Key to Circled Reference Numbers**
- CORN WET**
- 1—FS 608 "Efficient Corn and Sorghum Harvesting."
 - 2—Ext. Circ. 663 "Rates Paid for Custom Work in South Dakota."
 - 3—Ext. Circ. 664 "Machinery Costs, Own, Lease or Custom Hire."
 - 4—A Guide for Measuring Corn Harvest Losses." AED 108.
 - 5—FS 610 "Temporary Storage."
 - 8—FS 607 "Drying the Crop with Less Fuel."
 - 6, 7 and 29—see Flow Chart on other side for Corn Handling (Dry).
 - 9—USDA Misc. Publication No. 919 "Drying Ear Corn by Mechanical Ventilation."
 - 10—FS 609 "High Moisture Grain Storage."
 - 11—FS 532 "Cold-Air Aeration."
 - 12—FS 530 "Batch Drying in a Bin."
 - 13—FS 531 "In Storage Drying."
 - 14—"Low Temperature Drying of Shelled Corn." Illinois Farm Electrification Council.
 - 15—USDA Farmers Bulletin No 2214 "Drying Shelled Corn and Small Grains."

Corn Handling (Dry)



Numbers in circles appearing near blocks refer to more information on the subject. These are listed in the key. Most of these publications listed may be obtained through your County Extension Agent or from the Bulletin Room at South Dakota State University, Brookings, S. D. 57006. When ordering, please give the number and title of the publication.

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 - 4—"A Guide for Measuring Corn Harvest Losses." AED 108.
 - 5—FS 610 "Temporary Storage."
 - 6—USDA Farmers Bulletin No. 2071, "You Can Store Grain Safely on the Farm."
 - 7—Agricultural Engineering Digest-12
 - 29—USDA Farmers Bulletin No. 2009, "Storage of Small Grains and Shelled Corn on the Farm."

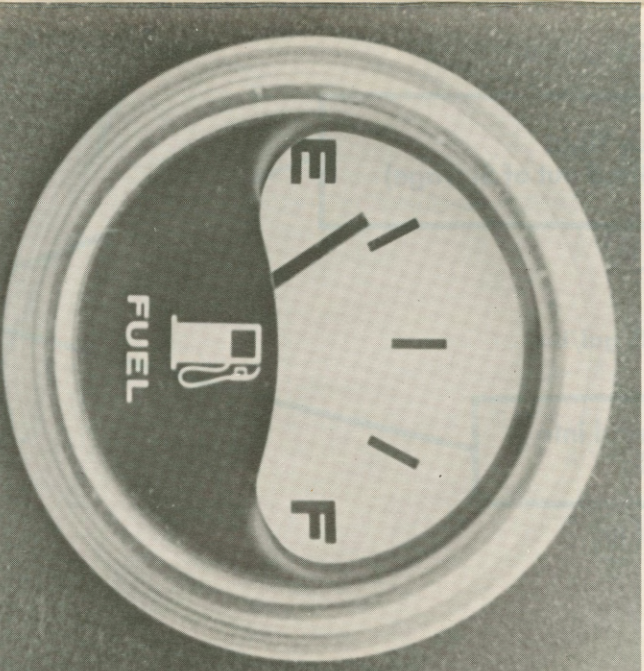
Other Fact Sheets in This Series

This Fact Sheet is one of six in a series dealing with fuel-energy requirements in harvesting and storage of corn and grain sorghum. The entire series includes the following:

- FS 605—Corn Harvesting Alternatives and Associated Fuel-Energy Requirements.
- FS 606—Grain Sorghum Harvesting Alternatives and Associated Fuel-Energy Requirements.
- FS 607—Drying the Crop with Less Fuel.
- FS 608—Efficient Corn and Sorghum Harvesting.
- FS 609—High Moisture Grain Storage
- FS 610—Temporary Storage.

These fact sheets are available through your county Extension agent or the Bulletin Room, South Dakota State University, Brookings, S. D. 57006.

Cooperative Extension Service
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Corn Harvesting
Alternatives and Associated Fuel-Energy Requirements

FS 605

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